

FIBER OPTIC STRAIN SENSOR

KEY FEATURES

HIGHLY VERSATILE SENSOR FOR DEFORMATION MONITORING IN HARSH ENVIRONMENT



OSP-A (Optical miniature Strain bare sensor)

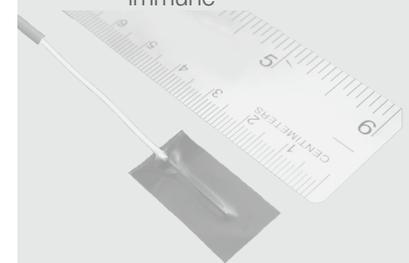


Instrumented bolt



OSP-FP
(Optical Polyimide foil
Strain gauge)

- Maintenance free without drifting over time
- Outstanding repeatability
- No temperature compensation required
- Insensitive to transverse strains
- Intrinsically safe
- Easy to set-up and operate
- EMI/RFI and microwave immune



OSP- A Miniature - OSP- FP Polyimide Foil

DESCRIPTION

Opsens Solutions' fabrication processes ensure an exact definition of the gauge factor, making the OSP-A sensor the most accurate fiber-optic strain gauge sensor in the industry.

Combined with Opsens' WLPI signal conditioning technology (Patent # 7,259,862) and the inherent advantages of fiber optics, the OSP-A delivers **unprecedented repeatability** and **reliability** in the most adverse conditions such as high levels of electromagnetic fields as well as high voltage and rapid temperature cycling conditions.

The OSP-A uses two optical fibers that are precisely aligned inside a microcapillary tube to form an optical Fabry-Pérot interferometer. This makes the OSP-A strain gauge completely immune to any electromagnetic interference.

It is completely **insensitive to transverse strains and temperatures** and its micro-miniature size makes the OSP-A fiber optic sensor ideal for space-constrained applications such as intelligent load-sensing bolts and studs. Careful choice of materials for the sensor, fiber coating and cable buffering permit a high temperature **operating range from -40 °C to +250 °C**.

This miniature and robust fiber optic strain gauge sensor, available in different cables and sheath options, may be customized to customer specific requirements or for OEM-type applications.

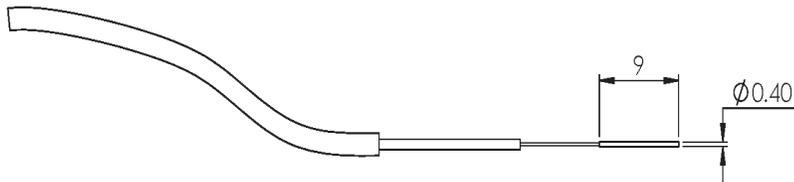
APPLICATIONS

- Civil engineering and geotechnical applications
- Marine and subsea conditions
- High voltage environments
- Radiated environments
- Nuclear and hazardous environments
- ATEX environment and zone exposed to explosive atmosphere

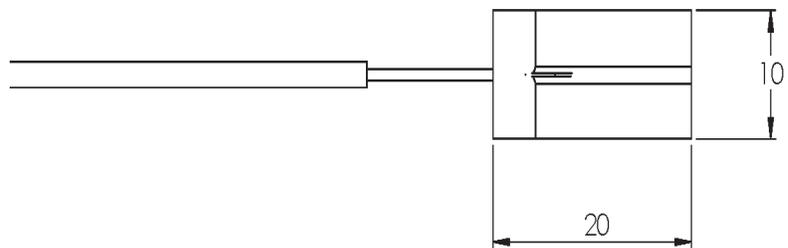
OSP-A & OSP-FP

FIBER OPTIC STRAIN SENSOR

OSP-A



OSP-FP



SPECIFICATIONS

MEASURING RANGE (other ranges available on request)	± 500 $\mu\epsilon$	± 1 000 $\mu\epsilon$	± 2 500 $\mu\epsilon$	± 5 000 $\mu\epsilon$	± 7 500 $\mu\epsilon$ (Extended Range Design)
RESOLUTION	0.15 $\mu\epsilon$				
TEMPERATURE SENSITIVITY	Technology requiring no temperature compensation				
TRANSVERSE STRAIN SENSITIVITY	Insensitive				
TEMPERATURES OPERATING RANGE	-40°C to +250°C (other temperatures available upon request)				
EMI/RFI SUSCEPTIBILITY	Complete immunity				
CABLE LENGTH	Up to 3 km (Sampling rate dependent, consult factory for more details)				
CABLE SHEATHING	From ruggedized flexible outdoor cable to robust stainless steel cable				
OPTICAL CONNECTOR	SCA (Standard), SC (Standard), other connector available on request				
SIGNAL CONDITIONER COMPATIBILITY	All Opsens Solutions' WLPI signal conditioners				
LINEARITY, REPEATABILITY and HYSTERESIS ERROR (combined)	< 0.15%				
RETURN TO INITIAL STRAIN LEVEL (LAG & LATENCY)	Instantaneous				